



PRINCIPLES OF TURFGRASS MANAGEMENT

CERTIFICATE PROGRAM

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THE FOURTEEN CHAPTERS AND LEARNING OBJECTIVES

1. Turfgrass Morphology, Growth, and Physiology
2. Turfgrass Identification, Adaptation, and Use
3. Soils
4. Turfgrass Establishment
5. Fertilization
6. Mowing
7. Irrigation
8. Weeds
9. Turfgrass Insects
10. Turfgrass Diseases
11. Pesticides
12. Turfgrass and the Environment
13. Solutions to Common Turfgrass Problems
14. Customer Relations and the Importance of Professionalism

Chapter 1 — Turfgrass Morphology, Growth, and Physiology

Learning Objectives:

- How to tell the difference between monocotyledon and dicotyledon plants
- Why an overall understanding of the growth and development of the turfgrass plant is important
- How to identify the primary structures of the grass plant and explain their functions
- How photosynthesis, respiration, and stored carbohydrates function in plant metabolism

Chapter 2 — Turfgrass Identification, Adaptation, and Use

Learning Objectives:

- Where the five climatic zones of turfgrass adaptation are located and what the characteristics of each are.
- How to identify the major turfgrass species
- What growth, adaptation, use, establishment, and maintenance characteristics distinguish the major cool-and-warm-season turfgrasses
- How turfgrass mixtures and blends can be important management tools
- What factors should be considered when selecting a turfgrass species for a particular site



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A unit of the Office of Public Service & Outreach. • 2-15/96619

Chapter 3—Soils

Learning Objectives:

- How soil is defined in relation to turfgrass management
- How various horizons compose a soil profile
- What physical and chemical properties of soils influence plant growth, including texture, structure, and cation exchange capacity
- How the organic components of soils (both living and non-living) influences plant growth
- How air and water are retained in different types of soil
- Why soil drainage is important and how to ensure good soil drainage

Chapter 4—Turfgrass Establishment

Learning Objectives:

- How the new turfgrass site should be prepared for planting
- How to use label information to get the best seed
- When to establish cool-and-warm-season turfgrasses
- What methods can be used to establish turfgrasses
- How to renovate a declining stand of turfgrass
- How to use winter overseeding to maintain turf appearance year-round

Chapter 5—Fertilization

Learning Objectives:

- What mineral nutrients turfgrass plants require, what these nutrients do, and how to recognize deficiency symptoms
- How to read a fertilizer label
- What characteristics are associated with fast-release and slow-release nitrogen fertilizers and the importance of each
- How to determine the fertility requirements of turfgrasses
- How rates, frequency, and timing of application influence the success of a fertilization program
- How to apply fertilizers to turfgrass areas
- How to avoid fertilizer burn on turfgrasses
- How to make calculations necessary to buy and apply fertilizers
- How to calibrate both rotary and drop-type fertilizer spreaders

Chapter 6—Mowing

Learning Objectives:

- Why mowing is the most fundamental practice in turfgrass culture
- How mowing affects the physiology and growth of turfgrasses
- What factors determine the best cutting heights for turfgrasses
- How to use the one-third rule of thumb to determine mowing frequency
- What are the advantages and disadvantages of reel and rotary mowers
- Why is it important to use or recycle grass clippings
- What growth regulators are and how they can reduce the need for mowing

Chapter 7—Irrigation

Learning Objectives:

- Why proper irrigation is one of the most challenging aspects of turfgrass management
- What factors should be considered when planning a turfgrass irrigation program
- How to recognize the visual symptoms displayed by turfgrasses under water stress
- What cultural practices influence water use rates and drought hardiness
- How wetting agents are used in turfgrass culture.
- How to conserve water

Chapter 8—Weeds

Learning Objectives:

- Why weeds have the unique ability to persist under unfavorable conditions
- How climatic conditions and soil factors as well as various cultural practices influence the occurrence of weeds in turfgrass areas
- How good turfgrass cultural and sanitary practices help prevent weed encroachment
- Which categories of herbicides are important in turfgrass weed control
- How to control annual and perennial grasses as well as broadleaf weeds in turfgrass
- How to identify the major grassy and broadleaf weeds found in Turfgrass

Chapter 9—Turfgrass Insects

Learning Objectives:

- What two types of developmental changes occur in insects
- How insects damage turf
- How to identify the characteristics and life cycles of insects that attack turfgrass
- How to diagnose turfgrass injury caused by insects
- How to detect the presence of injury-causing insects in turf
- What the principles of insect pest control in turf are

Chapter 10—Turfgrass Diseases

Learning Objectives:

- How disease-causing fungi infect plants and how the infection is spread
- How to diagnose turfgrass diseases
- How to identify the symptoms, affected turfgrasses, associated conditions, and possible control measures for the major diseases of turfgrass
- How nematodes injure turfgrasses and how they can be controlled
- Why the environment, host, and pathogen are critical factors in developing a turfgrass disease control program

Chapter 11—Pesticides

Learning Objectives:

- What are six basic methods of pest control
- What are the characteristics of various pesticide formulations
- What information is found on the pesticide label and why it is important
- How LD_{50} and LC_{50} are used to determine pesticide toxicity
- What three ways pesticides move in the environment
- How to handle, mix, and apply pesticides safely
- What are the proper procedures for storing and disposing of pesticides
- What precautions and procedures to follow when faced with a pesticide spill
- What are the various types and uses of pesticide application equipment
- What are the basic principles of integrated pest management
- How to calculate the area of various turf sites
- How to calibrate different types of pesticide application equipment
- How to calculate pesticide rates

Chapter 12—Turfgrass and the Environment

Learning Objectives:

- How turfgrass helps purify the air we breathe
- How turfgrass plays a role in carbon dioxide/oxygen conversion
- How turfgrass helps control soil erosion
- How turfgrass aids in water purification and conservation
- How turfgrass helps to control temperature
- How turfgrass contributes to increased soil fertility
- Why natural turf is superior to artificial turf as a playing field surface
- How turfgrass improves our quality of life

Chapter 13—Solutions to Common Turfgrass Problems

Learning Objectives:

- How to control excessive thatch accumulation
- What management practices will help alleviate turfgrass stress caused by extreme temperatures and drought
- Why most turfgrasses grow poorly under shaded conditions and what management practices can be used to improve shade tolerance
- How to reduce turfgrass injury caused by excessive traffic
- How to treat petroleum spills or leaks on turfgrass
- How to treat a spill or misapplication of a pesticide to a turfgrass area
- How turf colorants can be used as an alternative to overseeding dormant warm-season turfgrasses
- What specific situations or problems may be helped by the use of a wetting agent
- Why commercial growth enhancing products (biostimulants) may or may not work

Chapter 14—Customer Relations and the Importance of Professionalism

Learning Objectives:

- Why communicating with a customer is important
- How to communicate more effectively
- Why professionalism is key to your company's success
- How to turn complaints into a valuable communication tool
- Why customer communication is advertising
- What you can and cannot tell customers about the products you use

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For more information about the ***Principles of Turfgrass Management***, contact us at questions@georgiacenter.uga.edu or by telephone at +1-706-542-3537.